

Abrupt "Delta-Like" Doping in Si and SiGe films by UHV-CVD

ABSTRACT OF THE INVENTION

A structure and method of forming an abrupt doping profile is
5 described incorporating a substrate, a first epitaxial layer of Ge
less than the critical thickness having a P or As concentration
greater than 5×10^{19} atoms/cc, and a second epitaxial layer having
a change in concentration in its first 40Å from the first layer of
greater than 1×10^{19} P atoms/cc. Alternatively, a layer of SiGe
10 having a Ge content greater than 0.5 may be selectively amorphized
and recrystallized with respect to other layers in a layered
structure. The invention overcomes the problem of forming abrupt
phosphorus profiles in Si and SiGe layers or films in semiconductor
structures such as CMOS, MODFET's, and HBT's.